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Biometrics Testing in the Mona Pass

CG-926RDC | Dr. Thomas Amerson & Christina Rolka

International Biometrics Performance Conf.| 3 March 2010

Agenda

- **Overview of Coast Guard Operations**
  - Alien Migrant Interdiction Operations (AMIO)

- **Lessons Learned from Operations**
  - BASS Deployment Observations
    - Operational
    - Environmental
    - Technical
  - 10 Print Feasibility Study

- **Summary**

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Alien Migrant Interdiction Operations

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Biometric Program History

2006	2007	2008	2009
➤Program started at Sector San Juan as Mona Passage Proof-of-Concept ➤Subset of US-VISIT database loaded to hard drives ➤2-print collection L-1 RDT-3	➤Introduced UscgDesk ➤Biometrics transmitted over satellite comms ➤Deployed a second collection device with crews of Sector San Juan Datastrip DSVII	➤Expanded the proof-of-concept to Florida ➤Started training 87' cutters ➤Deployed a third collection device with crews of Sector San Juan MaxID IDLS3	➤Encouraged inter-agency cooperation with respect to data sharing ➤Initiated research on feasibility of 10-print vs. 2-print captures ➤Developing a multi-digit handheld RFI to be published by the end of CY09 ➤Recapitalizing South Florida equipment

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Biometrics At Sea System Process Cycle

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Biometrics Metrics

Data as of 10 January 2010 for Sector San Juan:

Metric	Number Encountered	% of total possible
Biometrics Collected	2622	99% of persons encountered
Database Matches	656	25% of records collected
Prosecutions	295	45% of matches 11% of biometrics collected

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BASS Deployment Observations

Operational Considerations

- Weight (Handheld Operations)

- One-Handed Operation

- Grip/Device Design

- Cleaning Requirements

- System Size (Including Storage)

- Ease of use (Operator and Subject)

BASS Deployment Observations (cont'd)

Technical Considerations

- Algorithms/Quality Scores

- System Indicators (Visual and Audio)

- Battery Life

- System Displays (Color/Text Design)

- Power Surge Protection

- Intrinsically Safe

- Design of Sensor (Color/Size)

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BASS Deployment Observations (cont'd)

Environmental Considerations

- Extreme Temperatures/Temperature Transition

- Environment Movement/Vibration

- Glare (Sunlight Exposure)

- Nighttime Operation

- Water Resistance (Spray)

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10-Print Feasibility Demonstration

What is the feasibility of capturing quality 10-print records at sea and submitting the records to IDENT over standard Coast Guard communication systems?

Study Plan:

– Developed a 10-print demonstration capture system

– Integrated COTS equipment with USCG developed software; KVH TracPhone7 satellite communications

– Lab, Pier-side, and Underway testing

– Tested multiple print slap and rolled capture of fingerprint biometrics

– Assessed best practices to be used while onboard the cutter

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10-Print Feasibility General Results

Environment Matters

- Direct sunlight completely prevented the optical scanner from capturing fingerprints
- Fingerprint quality scores were degraded in the field and worse when scored at US-VISIT
- Glare from direct sunlight entirely obscured the laptop's display image
- Internal and external humidity resulted in fuzzy, lower quality fingerprint images
- Finger alignment was critical for quality prints and successful software operation
  - Difficult due to sunlight and cutter movement
- Cutter engine noise completely masked audible displays

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10-Print Feasibility General Results (cont.)

Design Matters

– System Size: A stand-alone laptop is cumbersome on deck; a smaller form factor for capture is better

– Storage Case Size: Smaller cases are easier to store on 87- and 110-foot cutters

– Cables: System cables may become disconnected, severed, or lost during operations; standard connectors are a must

– Camera Flash: Camera flash can temporarily blind the subject, creating unsafe operations; lighting alternatives should be considered

– Cleaning Procedures: Cleaning procedures disrupt biometrics capture; fingerprint sensor should be designed for easy cleaning

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Summary

- **The Coast Guard biometrics program has been a success since its maiden deployment in 2006.**

- **Multiple factors need to be considered when evaluating equipment to function in this environment.**

  – Equipment that functions successfully in a controlled environment may encounter challenges in the field.

  – Testing in the operational environment is critical to identify any un-foreseen challenges prior to deployment.

- **Systems need to be designed with operational, environmental, and technical considerations.**

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